

Working Draft

Elements of Draft Conservation Strategy Alternatives

**Note:** This table summarizes the elements of each of the draft conservation strategy alternatives (CSAs). Placement of an “X” in columns indicates that the element is a component of the CSA. Placement of a “x” indicates that the element is a component of the alternative, but that it would be implemented at a smaller scale than under other alternatives that include the component.

Conservation Strategy Alternative Elements	Conservation Strategy Alternatives (CSAs) <sup>A</sup>										
	Static Delta					Fluctuating Delta					
	Existing Conveyance Facilities					New Conveyance Facilities					
	1	2	6	7	3	4	5	7	8	9	10
<b>Post-operational elements<sup>1</sup></b>											
1. Real-time operation of CVP and SWP pumps to minimize entrainment of fish during sensitive time periods	X										
2. Improvements to louver facilities at SWP and CVP pumps to minimize fish mortality	X										
3. Improve the SWP/CVP salvage collection, handling, transportation, and release (CHTR) processes to increase survival	X										X
4. Modify in-channel habitat structure at SWP/CVP facilities to reduce conditions that support predation of native fishes	X										
5. Improve facilities and pumping operations to minimize passage of fish into Clifton Court Forebay (CCF)	X										
6. Removal and consolidation of in-Delta diversions to minimize entrainment losses of fish	X					X	X				
7. Improve the effectiveness of ineffective screened diversions within the Delta	X										
8. Screen un-screened in-Delta diversions	X										
9. Operate the Delta Cross Channel (DCC) to improve passage and minimize adverse effects	X				X						

<sup>1</sup> Elements to be started after alternative is fully implemented. For CSAs requiring construction of new conveyance facilities (CSAs 4,5,8, & 9), these elements will begin after construction is completed.

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	Static Delta					Fluctuating Delta					
	Existing Conveyance Facilities					New Conveyance Facilities					
	1	2	6	7	3	4	5	7	8	9	10
10. Reduce reverse flows in Old River (net westward flow)	X										
11. Re-operation of upstream storage facilities to improve in-stream flows and cold water pool management and to increase Delta in-flow	X			X				X			
12. Opportunistic habitat restoration on channel-side of levees (no island restoration)	X	X	X	X	X	X	X	X	X	X	
13. Extensive in-Delta Levee setbacks		X	x	x	X	X	X	x	X	X	
14. Extensive restoration of aquatic and floodplain habitats:											
a. focused primarily on northern and eastern Delta		X	x	x	X	X		x	X	X	
b. focused Delta wide							X				
15. Improve habitat conditions in locations where covered fishes are highly vulnerable to predation		X	X	X	X			X			
16. Manage bypasses within the Delta to improve non-flow related habitat conditions for covered fish species		X									
17. Increased CVP/SWP pumping capacity to take advantage of high flow episodes with pumping limited at other times when covered species are least vulnerable to entrainment and no pumping at times they are most vulnerable to entrainment					X						
18. Provide flows that improve flow-related habitat conditions that mimic historical hydrological patterns (e.g., fluctuating salinity, east-west flow)					X						
19. Increased conveyance capacity south of Delta and additional south-of-Delta storage facilities and infrastructure to opportunistically store high flows, including concurrent improvements to louver facilities to minimize fish mortality					X						

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	1	2	6	7	3	4	5	7	8	9	10
20. Construct and operate a peripheral aqueduct (“South Delta Aqueduct”) from Sacramento River (near Hood) with state of the art screening with discharge into lower San Joaquin River						X					
21. Operate the Delta to reestablish fluctuating hydrologic conditions						X	X		X		
22. Construct and operate an isolated facility (IF) (i.e., “peripheral canal”) from Sacramento River (near Hood) with state of the art screening directly to the pumps to isolate the Delta from CCF and the SWP/CVP pumps.							X				
23. Modify DCC gate operations to maximize benefits for covered fish							X				
24. Breach dikes in Suisun Marsh to reestablish tidal exchange and create tributary channels necessary to create high quality intertidal marsh and aquatic habitats			X								
25. Modify operations of salinity control structures in Suisun Marsh to improve flow-related habitat conditions for covered fish in Suisun Marsh			X								
26. Improving passage and access to upstream habitats				X				X			
27. Restoration of spawning habitat (e.g., gravel augmentation)				X				X			
28. Expansion of river floodplain habitat including creation and expansion of new floodways				X				X			
29. Isolation of captured gravel pits				X				X			
30. Installation of screens on river diversions				X				X			
31. Removal of bank protection to reestablish floodplain processes				X				X			
32. Restoration of riparian habitat including shaded riverine				X				X			

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	Static Delta					Fluctuating Delta					
	Existing Conveyance Facilities					New Conveyance Facilities					
	1	2	6	7	3	4	5	7	8	9	10
33. Removal of bank protection to reestablish floodplain processes that support creation and maintenance of spawning and rearing habitat				X				X			
34. Restoration of riparian habitat including shaded riverine aquatic cover				X				X			
35. Modified operations to support in-stream flows for spawning and rearing, including bypass habitats, and cold water pool management				X				X			
36. Construct and operate a peripheral aqueduct from the Sacramento River (near Hood) with state of the art screening that is bifurcated at the discharge end: one split discharges into the CCF and isolates the SWP and CVP pumps (smaller discharge than under CSA 5), and the other split discharges into lower San Joaquin River (smaller discharge than under CSA 4).									X		
37. Limited exports continued from existing South Delta facilities									X		
38. Improvements/maintenance of through Delta conveyance facilities (e.g., reinforcing levees, dredging to maintain channel capacity)										X	
39. Construct and operate a peripheral aqueduct from Sacramento River (near Hood) of lesser capacity than under CSA 5 directly to the pumps to isolate the Delta from CCF and the SWP/CVP pumps										X	
40. Operate the Delta to reestablish fluctuating hydrologic conditions, though not to the extent under CSA 4 and 5										X	

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41. Divide the Old River channel to allow San Joaquin River flow to be separated from Victoria Canal water supply flows and install structures to regulate flows such that San Joaquin River flows are separated from the pumps and allowed to pass to the central Delta.											X
42. Open the DCC and install screens at the DCC and Georgiana Slough to prevent passage Sacramento River fish into the Central Delta and reconfigure in-Delta conveyance to create a water supply corridor toward the SWP and CVP using the DCC, rock barriers, floodgates, siphons, and pumps.											X
43. Operate Split Delta conveyance facilities to provide transport flows for juvenile Delta smelt and improve salinity conditions for estuarine fish along the lower San Joaquin River to Franks Tract.											X
<b>Pre-operational elements<sup>2</sup></b>											
44. Limited in-Delta levee setbacks and breaching of Delta islands to restore aquatic and floodplain habitats						X	X		X	X	
45. Real-time operation of CVP and SWP pumps to minimize entrainment of fish during sensitive time periods						X	X		X	X	
46. Improve the SWP/CVP salvage collection, handling, transportation, and release (CHTR) processes to increase survival						X	X		X	X	
47. Opportunistic habitat restoration on channel-side of levees (no island restoration)						X	X		X	X	

<sup>2</sup> Interim elements to be implemented during construction of new conveyance facilities for CSAs requiring this construction (CSAs 4,5,8, & 9)

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48. Improvements to louver facilities at SWP and CVP pumps to minimize fish mortality						X	X		X	X	
49. Operate the Delta Cross Channel (DCC) to improve passage of Sacramento River steelhead and salmon and minimize adverse effects on Sacramento River fish associated with moving into the Central Delta						X	X		X	X	
50. Re-operation of upstream storage facilities to improve in-stream flows and cold water pool management for benefit of riverine fish and to increase Delta in-flow for benefit of estuarine fish						X	X		X	X	
51. Improve habitat conditions in locations where covered fishes are highly vulnerable to predation to create habitat conditions that will reduce predation levels.						X	X		X	X	
<sup>A</sup> <b>Conservation Strategy Alternatives:</b> 1= CSA 1—Operations Modifications with Existing Conveyance Configuration 2 = CSA 2—In-Delta Habitat Restoration under Existing Operations 3 = CSA 3—Opportunistic Exports with In-Delta Habitat Restoration 4 = CSA 4—South Delta Aqueduct with In-Delta Habitat Restoration 5 = CSA 5—Isolated Facility with In-Delta Habitat Restoration 6 = CSA 6—Suisun Marsh Habitat Restoration in Combination with In-Delta Restoration 7 = CSA 7—Upstream Habitat Restoration in Combination with In-Delta Restoration 8 = CSA 8—Bifurcated SDA with In-Delta Restoration 9 = CSA 9—Dual Conveyance with In-Delta Restoration 10 = CSA 10—Split Delta with San Joaquin River Corridor Restoration											